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RESEARCH

Work-related determinants of return to work of employees on long-term sickness absence

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Abstract

Purpose. The aim of the study is to identify work-related determinants of return to work (RTW) of employees who are on long-term sickness absence.

Method. The study was based on a sample of 926 employees on sickness absence (maximum duration of 12 weeks). The employees filled out a baseline questionnaire and were subsequently followed until the 10th month after listing sick. Cox proportional hazards regression analyses were used to identify determinants of RTW.

Results. Working in one of the vocational sectors public administration, construction, financial and commercial services, transport, or education ($P=0.00$) and having low co-worker support ($P=0.01$) were related to longer duration to RTW in the multivariate model. Having low supervisor support ($P=0.01$) was associated with a higher RTW rate.

Conclusions. Vocational sector is a strong predictor of RTW. Especially employees from the sector education are slow as to RTW. The observed association between low supervisor support and RTW was unexpected. However, the study confirms earlier research on the association between low co-worker support and RTW.

Keywords: *Sick leave, determinants, work-related, return to work*

Introduction

The Netherlands has a high rate of permanent work disability (> 1 year). In 2001, the number of people receiving benefits due to permanent work disability had risen to 980 000. This means that 13% of the working population was fully or partially absent from work, due to permanent, work disability [1]. As a result work disability leads to considerable costs for society as a whole. In 1999, the financial burden of work disability for Dutch society amounted to 2.6% of the gross national product [2]. On a more personal level, work disability can also have severe consequences for the employee. In the long run employees can be faced with reduced income, dismissal, and social isolation [3–5].

During the last decade the government has tried to reduce the number of people relying on a permanent disability pension. Firstly, employers were encouraged to control the volume of permanent work disability by making them responsible for the costs of permanent work disability as much as possible.

Second, the scope of the disability pension for employees was reduced by tightening the admission criteria and reducing the benefit levels [6,7]. These attempts, however, have not been entirely successful. Although the number of people relying on a disability pension would probably have been higher without these interventions, there are still too many people proceeding from being temporarily disabled to being permanently disabled [6,7]. Policymakers are therefore continuously searching for new ways to reduce the number of people applying for permanent disability benefits. One of the main focuses is the early detection of employees who are at risk of long-term sickness absence in order to quickly intervene and prevent permanent work disability. Longer duration of sickness absence increases the risk of permanent disability, and thus creates a higher inflow into the disability benefit system [8–10]. In the Netherlands about one-third of the employees who have been on sick leave for 13 weeks have to apply for a disability pension in a later stage [2]. In 2002, these insights have led to legislation that regulates the first

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year of sickness absence. Occupational health services (OHS) are now obliged to analyze the situation of employees who are on long-term sickness absence in order to make a prognosis about the ability to work and to suggest interventions to help the reintegration process. This so-called 'problem analysis', which in practice takes place within 12 weeks after the employee reporting sick, is meant as a tool for employer and employee to facilitate return to work (RTW) and concentrates mainly on the relationship between the employee, his or her health restrictions and the work environment. For the employee and the employer it is important to take notice of the advice the OHS gives in the problem analysis because under the new law they are faced with negative financial consequences if one or both of them are responsible for the failure to RTW within the first year of sick leave.

Within this context it is important for all parties concerned to have insight in possible determinants of RTW. The OHS has to determine the chances of an employee returning to work in a relatively early stage, while employer and employee need to decide how best to proceed with the reintegration process. The work environment is one of the main areas to look at. In literature several work-related determinants are identified. Company size [11–13], vocational sector [11], duration of employment in the present job [12,14], job demands [15–17] and social support from both supervisor and co-worker [15–17] all seem to be related to RTW. However, not many studies concentrate on RTW of employees who are already on long-term sick leave and who are, because of this very reason, at risk of becoming permanently disabled. Determinants of RTW might be quite different for this specific group than for employees who have been ill for only a short period [13,16]. Furthermore, work-related determinants are often not the main focus of the study, which entails the risk that work-related determinants are overlooked within the context of many other determinants. The aim of the present study is to identify work-related determinants of RTW of employees who are already on long-term sick leave.

Methods

Study population

Employees on sick leave were recruited from OHSs covering three large regions in the Netherlands. Computerized files were used to identify employees who had received a problem analysis from their OHS. From September 2002 to March 2003, 3818 employees having received a problem analysis and a maximum duration of sickness absence of 12 weeks were sent a letter by the OHS in which they were

asked to participate in the study. The letter also explained the purpose and the general outline of the study, the voluntary nature of participation and anonymity of responses was guaranteed. Employees who did not respond within 2 weeks received a written reminder. In total 1170 employees (30%) returned the enclosed consent form after which a baseline questionnaire was sent to them. Information on age, gender and region of the OHS was available for all non-respondents. On these variables a non-response analysis was performed. Respondents were older than non-respondents ($p = 0.00$) but did not differ according to gender or region of the OHS.

One thousand and four employees (86%) completed the baseline questionnaire. After completion 78 employees were excluded from the study for various reasons. Thirty-eight employees appeared not to have received a problem analysis from their OHS or a problem analysis was wrongly administered. Fifteen employees gave a date of sickness absence that deviated considerably (more than 6 months) from the date provided by the OHSs. Eight employees were on sick leave due to pregnancy-related health complaints. Because of maternity leave it was not possible to calculate the time to return to work for this group. In five cases employees had already returned to work before the OHS identified them as possible participants for the study. From nine of the employees who returned to work the date of return was not available. Three more employees were excluded because it was obvious they could not have filled out the questionnaire in a reliable way (e.g., the employee mentioned he did not have the Dutch language skills required).

Procedure and measures

A baseline questionnaire was administered at entry into the study. In order to record return to work employees were followed until the 10th month, after listing sick. Follow-up questionnaires were sent at 9.5 months after listing sick, and if – according to the OHSs – an employee returned to work within this period of time.

The baseline questionnaire included information on sociodemographic, occupational and job characteristics as well as RTW. Sociodemographic characteristics such as age, gender and educational level were included as potential confounders. Educational level was operationalized as very low (no education or primary school), low (lower vocational education or lower secondary school), medium (intermediate vocational education or upper secondary school) and high (upper vocational education or university).

Eight different occupational characteristics were included. Employees were asked about duration of

employment in the present job, total duration of employment, extent of employment (number of working hours per week), type of working hours (regular/irregular), management position, status of employment (permanent/temporary), vocational sector and company size.

The Questionnaire Perception and Evaluation of Work (VBBA), a widely used reliable and validated Dutch questionnaire for the perception of psychosocial workload, work stress and the work organization [18], was used to measure work tempo and work quantity (11 items, $\alpha=0.89$), emotional effort (7 items, $\alpha=0.84$), physical effort (7 items, $\alpha=0.90$), independence in work (11 items, $\alpha=0.89$), enjoying work (9 items, $\alpha=0.87$), and commitment to the organization (8 items, $\alpha=0.52$). The first four subscales were scored on a four-point Likert scale, ranging from 'never' to 'always'. The last two subscales contained yes–no questions. All subscales were transformed to a 0–100 range according to the VBBA-manual. Supervisor support and co-worker support were measured with the Work stress questionnaire Doetinchem (VOS-D) [19]. The two subscales each contain five items that were scored on a four-point Likert scale. The mean score was computed for both subscales. The reliability of the supervisor support and co-worker support subscales are 0.87 and 0.81, respectively.

RTW was measured by two questions. First, employees had to indicate their current work status, in terms of full RTW, partial RTW and being on full sick leave. Full RTW was defined as working according to the number of hours of the initial work contract. Subsequently, employees who indicated to have returned to work fully had to write down the date on which they actually did so.

The date of listing sick was provided by the OHSs. For those employees who returned to work during the study period the OHSs also provided the date of RTW. In those cases in which the employee had not written down the date of RTW or was lost to follow up, we used this date as a proxy for calculating the time to RTW.

Data analysis

Cox proportional hazards regression analyses were used to model the effect of the independent variables on time to RTW, which was defined as the time between identification by the OHS and first full RTW. A Kaplan–Meier survival analysis was performed to calculate the median time to RTW for the whole group. Continuous variables were broken into meaningful groups to be able to assess them in the same way as the categorical variables. The subscales of the VBBA and the VOS-D were recoded in a low

and high score, with the 75th percentile as cut-off point.

Univariate Cox proportional hazards regression models were used to assess the independent contribution of each variable to the probability of RTW. Hazard ratios and 95% confidence intervals (95% CIs) were estimated for each variable. Following Krause et al. [16] we will refer to the hazard ratio as relative RTW rate as we are modeling a positive outcome (RTW) instead of a negative outcome which makes the term 'hazard' confusing. A relative RTW rate greater than one reflects a shorter duration of sickness absence relative to the reference group.

The strategy of the analyses was to compare the baseline model and a model including a single variable with the likelihood ratio test that measures the extent to which data are fitted by the particular model. All variables with a p value of less than 0.20 in the univariate model were included in the multivariate model [20]. Age, gender, level of education and time to identification by the OHS were included as control variables. All significant work-related variables and the four control variables were put in the multivariate model at once. Using the Wald statistic, the work-related variables which were not significant ($p > 0.05$) were then deleted from the model one at a time. Interaction terms were added, but were found not to be significant. The proportional hazards assumption was graphically checked by plotting the 'log minus log' survivor function. The assumption appeared to be met. As a last step, influential cases were identified and checked. No cases were excluded for this reason.

We used the statistical package SPSS version 11.0.1 for the statistical analyses [21].

Results

Descriptives

The total sample ($n=926$) consisted of 466 (50%) men and 460 (50%) women. The mean age was 46 years (SD 9.5) with a range from 18 to 63. The proportion of employees with a very low level of education was 8%, 33% of the employees had a low level of education, 30% had a medium level of education, and 30% had a high education level.

At the end of the study period 598 employees (65%) had returned to work, whereas 257 employees (28%) had not. Seventy-one employees (8%) were lost to follow up and were thus coded as censored cases for the analyses. From 74 employees who returned to work, we used the date of RTW provided by the OHSs. The median time from identification by the OHSs to RTW was 160 days (SD 7).

Predictors for RTW

Table I presents the results of the univariate Cox regression models for each of the occupational characteristics.

Employees with a duration of employment in the present job of 15–24 years, and 25–45 years have

Table I. Occupational factors for return to work: univariate relative RTW rate and 95% confidence interval (CI).

Variable	Subjects (<i>n</i>)	Relative RTW rate (95% CI)	<i>p</i> value*
Duration of employment in present job (years)			0.05
0–4	351	1.00 –	
5–14	296	1.15 (0.95–1.39)	
15–24	164	0.84 (0.66–1.06)	
25–45	103	0.88 (0.66–1.17)	
Total duration of employment (yrs)			0.59
0–14	226	1.09 (0.89–1.34)	
15–24	268	1.09 (0.90–1.32)	
25–48	25–48	1.00 –	
Extent of employment (hrs)			0.76
≤ 19	96	0.90 (0.69–1.19)	
20–34	292	1.00 (0.84–1.20)	
≥ 35	511	1.00 –	
Status of employment			0.99
Permanent	846	1.00 –	
Temporary	54	1.00 (0.70–1.44)	
Type of working hours			0.01
Regular	648	1.00 –	
Irregular	263	1.27 (1.07–1.51)	
Management position			0.15
No	725	1.00 –	
Yes	181	1.16 (0.95–1.41)	
Vocational sector			0.00
Health care and welfare services	246	1.00 –	
Industry	159	1.20 (0.96–1.52)	
Trade	27	1.07 (0.67–1.70)	
Culture, recreation and other services	44	0.89 (0.60–1.34)	
Construction	73	0.85 (0.62–1.18)	
Other	20	0.83 (0.48–1.43)	
Public administration	84	0.78 (0.57–1.05)	
Transport	48	0.78 (0.52–1.16)	
Financial and commercial services	42	0.74 (0.49–1.13)	
Education	140	0.46 (0.35–0.61)	
Company size (employees)			0.01
1–9	33	0.64 (0.39–1.05)	
10–99	269	0.79 (0.65–0.94)	
≥ 100	599	1.00 –	

**p* value for the likelihood ratio test.

lower relative RTW rates (relative RTW rate 0.84 and 0.88, respectively; $p=0.05$) than those employees who have an employment duration of 0–4 years. Having irregular working hours is associated with shorter time to RTW (relative RTW rate 1.27, 95% CI 1.07–1.51; $p=0.01$). The vocational sector seems to be another significant predictor for the rate of RTW ($p=0.00$). Employees from the sectors industry and trade have higher relative RTW rates than employees from the reference sector health care and welfare services, while all other sectors have lower relative RTW rates. Employees from the educational sector have the longest duration to RTW, with a reduction in RTW rate of 54% (relative RTW rate 0.46, 95% CI 0.35–0.61). Also company size is found to be associated with RTW ($p=0.01$). With decreasing company size, the relative RTW rate also decreases. Total duration of employment, extent of employment, status of employment and management position do not significantly contribute to RTW.

Among the job characteristics (Table II), supervisor support is significantly associated with RTW. Employees with low supervisor support have a higher relative RTW rate (relative RTW rate 1.23, 95% CI 1.02–1.49; $p=0.04$) than those employees with high support. For co-worker support there is a trend that low co-worker support is associated with a longer time to RTW (relative RTW rate 0.79, 95% CI 0.61–1.02; $p=0.06$). High work tempo and work quantity tends to be associated with a reduction of the RTW rate with 17% (relative RTW rate 0.83, 95% CI 0.68–1.01; $p=0.06$).

Educational level is a control variable significantly associated with RTW (Table III). Employees with a high educational level take the longest time to RTW, while the reference group with a low educational level takes the shortest time to RTW ($p=0.01$). Gender, age, and duration to identification by the OHS do not significantly contribute to RTW.

Vocational sector, supervisor support and co-worker support are the variables that remain in the final multivariate model (Table IV). Having low co-worker support, and working in the sectors public administration, construction, financial and commercial services, transport, or education is unfavorable in relation to RTW. Having low supervisor support, however, is associated with a higher RTW rate.

Discussion

In this study we investigated work-related determinants of RTW of employees on long-term sick leave who are at risk of becoming permanently disabled. In the Netherlands, new legislation has come into force in order to quickly intervene and prevent permanent disability. All employees who have been ill for longer

Table II. Job factors for return to work: univariate relative RTW rate and 95% confidence interval (CI).

Variable	Subjects (n)	Relative RTW rate (95% CI)	p value*
Work tempo and work quantity			0.06
Low	715	1.00 –	
High	202	0.83 (0.68–1.01)	
Emotional effort			0.30
Low	711	1.00 –	
High	207	0.90 (0.74–1.10)	
Physical effort			0.78
Low	695	1.00 –	
High	223	1.03 (0.85–1.24)	
Independence in work			0.97
Low	698	1.00 –	
High	217	0.99 (0.82–1.20)	
Enjoying work			0.34
Low	716	1.00 –	
High	197	0.91 (0.74–1.11)	
Commitment to the organization			0.45
Low	696	1.00 –	
High	188	1.08 (0.88–1.33)	
Supervisor support			0.04
Low	715	1.00 –	
High	197	1.23 (1.02–1.49)	
Co-worker support			0.06
Low	791	1.00 –	
High	117	0.79 (0.61–1.02)	

*p value for the likelihood ratio test.

Table III. Control variables for time to return to work: univariate relative RTW rates and 95% confidence intervals (CI).

Variable	Subjects (n)	Relative RTW rate (95% CI)	p value*
Gender			0.09
Male	466	1.00 –	
Female	460	0.87 (0.74–1.02)	
Age (years)			0.66
18–34	127	1.12 (0.87–1.44)	
35–44	250	1.13 (0.92–1.37)	
45–54	362	1.00 –	
55–64	187	1.06 (0.85–1.32)	
Educational level			0.01
Very low	74	0.91 (0.66–1.26)	
Low	299	1.00	
Medium	269	0.97 (0.79–1.18)	
High	270	0.72 (0.59–0.89)	
Duration to identification by the OHS (days)			0.82
0–42	218	1.00 (0.80–1.25)	
43–54	235	1.00	
55–70	232	0.98 (0.78–1.22)	
≥ 71	229	0.91 (0.72–1.14)	

*p value for the likelihood ratio test.

than 6 weeks fall under this law that dictates the procedure that has to be followed to facilitate RTW.

This gave us the opportunity to investigate RTW within a framework that applies to all employees on long-term sick leave within the whole country.

The majority of the employees participating in the study (65%) fully returned to work within 10 months after listing sick. The other 35% of the employees who are still on sick leave at that time will either have to apply for a disability pension or for a postponement of the disability pension application in case they expect to fully return to work within a reasonable period of time. When official figures on RTW within the new system become available it will be interesting to compare our findings with them.

The study identified three main work-related predictors of RTW: vocational sector, supervisor support and co-worker support. In the present study vocational sector appears to be a strong predictor of RTW although this might have been influenced by the rather high non-response rate. In previous studies, working in construction has been found to be a predictor of prolonged duration of work disability [11,22]. Our study confirms this finding, but we also found several other sectors which have a negative effect on RTW. Apart from construction, employees from the sectors public administration, financial and commercial services, transport, and education all have a worse prognosis for RTW compared with employees from the health care and welfare services sector. Especially the RTW rate of employees from the sector education is very low. This sector is also responsible for the poor performance of employees with a high educational level. The low relative RTW rate of the highest educational level (relative RTW rate = 0.72) reported in Table III disappears when the sector education is left out of the analysis. An explanation for the results of the sector education might be found in the special conditions of this kind of employment [23]. In an expert meeting on sickness absence in primary and secondary education several of these conditions are mentioned as possible causes for prolonged sickness absence [24]. It is often difficult to offer teachers modified work because there are not many other tasks but teaching. This can explain the low RTW rate of this sector because modified work programs can facilitate RTW [25]. Furthermore, when teachers do return to work they return to a classroom and thus to an environment which is stressful for them, with students who have become increasingly articulate and teaching programs which have changed drastically during the last few years [24,26].

Unexpectedly, low supervisor support is associated with a higher RTW rate. This is contrary to most of the evidence from earlier research that suggests that low supervisor support leads to longer duration of work disability [16,17,27]. We came across one recent Dutch study in which low supervisor support

Table IV. Cox's regression model of variables affecting return to work: multivariate relative RTW rate and 95% confidence intervals (CI)*.

Variable	Subjects (<i>n</i>)	Relative RTW rate (95% CI)	Wald test <i>p</i> value
Vocational sector			0.00
Health care	233	1.00 –	
Industry	148	1.03 (0.77–1.37)	
Trade	26	0.91 (0.56–1.47)	
Culture	43	0.82 (0.54–1.25)	
Other	20	0.77 (0.43–1.36)	
Public administration	76	0.70 (0.50–0.97)	
Construction	71	0.65 (0.45–0.96)	
Commercial services	40	0.64 (0.41–0.99)	
Transport	46	0.63 (0.40–1.00)	
Education	130	0.43 (0.31–0.58)	
Supervisor support			0.01
High	656	1.00 –	
Low	177	1.37 (1.10–1.71)	
Co-worker support			0.01
High	729	1.00 –	
Low	104	0.70 (0.54–0.93)	

*Adjusted for gender, age, educational level and duration to identification by OHS.

was associated with RTW, but this was only true for a subgroup of employees having physical health complaints [28]. There are several possible explanations for our finding. First, the concept of 'pressures to attend' [29] may explain the relationship between supervisor support and RTW. In the model of Steers and Rhodes [29] 'pressures to attend' can enhance the motivation of employees to attend work. They identify economic and market conditions as one of the major pressures. During the study period the economic situation in the Netherlands deteriorated and unemployment figures rose considerably. Under these circumstances employees are afraid to lose their jobs and are more likely to attend work in spite of being ill [7]. Low social support from the supervisor might enhance this feeling of job insecurity because it may be perceived as a sign of indifference or of a bad relationship with the supervisor. Therefore, low social support may act as an extra 'pressure to attend'.

Another possible explanation comes from the psychology literature. In a recent study on the negative effects of social support at work, it is put forward that under certain circumstances social support may have negative effects on health and well-being of employees [30]. Two of the circumstances mentioned could apply to our findings. First, negative effects can emerge if social support threa-

tens the freedom of choice and autonomy of the recipient, in other words if it is imposed on the recipient [30]. Second, social support can make the recipient feel inferior or dependent upon the provider. Within the context of our study this could mean that the currently more restrictive RTW procedure may lead to feelings of losing the freedom of choice and autonomy over one's own RTW process or of being dependent on the supervisor for RTW. Although the implications of the study for explaining our results are interesting, it is important to keep in mind that the context in which the study mentioned was carried out is different from ours as it does not deal with sickness absence or RTW but with social support received while performing a task. However, there might be another explanation that implies a quite different effect of supervisor support. It could be argued that the supportive and empathic supervisor creates an atmosphere in which the sick employee feels authorized to stay at home for a longer period of time than is strictly necessary.

In contrast to the effect of low supervisor support, low co-worker support is associated with longer duration of sickness absence. These findings are in line with earlier research. In a Dutch study about prognostic factors for chronic disability of acute low-back pain patients van der Weide et al. [15] found that having problems with colleagues was predictive of a longer time to RTW. Krause et al. [16] concluded that although co-worker support was not statistically related to time to RTW, the effect was in the expected direction, indicating that employees with low co-worker support tend to be on sickness absence for a longer period of time.

The results presented in this article have some practical implications. OHSs can use the vocational sector as a risk indicator for longer duration of disability. If an employee works in one of the sectors at risk, the OHS should be more vigilant about the RTW process and intervene earlier if this process appears not to be successful. Another implication lies in the finding that low supervisor support can have a positive effect on RTW. Under the new law supervisors are obliged to have regular contact with their sick employee under the presumption that this would facilitate RTW. However, this relation is not as straightforward as it seems. Therefore, policymakers and the OHSs should be careful with their standard recommendation of having regular contact with the employee. Further research is necessary to understand the relation between supervisor support and RTW in more detail.

Finally, several limitations to the present study should be mentioned. First, most of the data was gathered retrospectively and by self-report; only RTW was measured in a prospective way. Therefore, it is possible that the data are subject to recall bias.

Furthermore, because the baseline questionnaire was filled out several weeks after listing sick, the experience of being on sick leave might have colored the response to the questions on job factors. The date of listing sick, and for some employees the date of RTW, was supplied by the administrative database of the OHSs and thus subject to possible entry errors.

A problem for this study is the response rate. Only 30% of the employees who were asked to participate in the study agreed to fill out the questionnaire. For this study we wanted to exclude employees who were not able to fill out the questionnaires due to language problems, female employees who were on sick leave due to pregnancy problems as well as employees from sheltered workshops. Unfortunately, the computerized files could not be used to make this further selection. It is possible that up to 25% of the employees who received an informational letter would normally not have been contacted. This includes employees who were wrongly identified by the computerized files as having received a problem analysis. Furthermore, the informational letters were sent by the OHS because of stringent privacy regulations. This certainly will have influenced the response rate in a negative way as some employees will have been anxious to participate in a study which was initiated by the OHS. Although the high rate of non-response is inherent to the way in which the prospective respondents were approached, it still implies a threat to the generalizability of the results. The non-response analysis shows that the respondents are older than the non-respondents, but they do not differ in gender or region of the OHS. However, because the remaining sample size is large and because of the adjustments for age, educational level, gender, and time till identification by the OHS we think that the results presented in this article are a representative reflection of work-related determinants of RTW in the Netherlands.

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